*JOINT FORCES STAFF COLLEGE*
JOINT ADVANCED WARFIGHTING SCHOOL


# "FLEXIBLE PRECISION:" AIR FORCE'S ANSWER TO ARMY TRANSFORMATION AND INTRATHEATER AIRLIFT ON THE 21ST CENTURY BATTLEFIELD

by

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The contents of this paper reflect on my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense

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# ABSTRACT

The changing operational environment has motivated the Army to undergo its largest transformation since WWII. The Army decision to procure the Joint Cargo Aircraft (JCA) has rekindled the "roles and missions" debate that first surfaced soon after the Air Force stood up as a separate service. Both the Army and Air Force have a legitimate requirement to recapitalize—the average age of Army cargo aircraft is over twenty years old and the average age of active duty Air Force C-130s are almost thirty-five years old. The significant increase in capability of the JCA, however, compared to current Army cargo aircraft (twice the range and three and a half times the payload capacity) is the source of the current "roles and mission" debate.

The purpose of this paper is to offer a solution to meeting intratheater airlift requirements that supports the Army's recent transformation. History is full of examples where the intratheater airlift community has embraced new technologies or modified operational procedures in order to overcome evolving threats and resupply troops in the field. The situation today is no different. Two examples of how the Air Force can adapt to support this Army transformation will be proposed. The first example involves using Joint Precision Air Drop System (JPADS) technology to resupply ground forces. The second involves On-Call Airdrop, a time-sensitive employment capability for airlift that adopts procedures currently used by the Close Air Support (CAS) community.
Both JPADS and on-call airdrop represent a new distinctive capability—*Flexible Precision*—that the airlift community offers a joint force commander (JFC).

The thesis of this paper is to add the concept of *Flexible Precision* as a USAF fixed-wing distinctive capability to enhance the JFC's ability to meet war-fighter logistical needs and allow the Air Force to continue as the intratheater airlift provider for Army requirements on the 21st century battlefield.

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## Introduction

*"The more things change, the more they remain the same."*[1]
*-- Alphonse Karr*

The United States Army's recent decisions to recapitalize fixed-wing aviation assets and procure the Joint Cargo Aircraft (JCA) once again bring into question the "roles and missions" debate that first surfaced soon after the Air Force stood up as a separate service. In 1948, Secretary of Defense Forrestal faced the ongoing issue of "What is to be the use, and who is to be the user of air power?"[2] To answer this question, SecDef Forrestal gathered the Joint Chiefs of Staff (JCS) in Key West, Florida in March 1948. The outcome of this gathering addressed the roles and missions of airpower and became known as the Key West Agreement.

Today, almost sixty years later, the Army and Air Force once again are raising the "roles and mission" issue, this time regarding the intratheater airlift mission. French journalist Alphonse Karr's 1849 quote above appears timeless, particularly when considering the renewed "roles and missions" debate between the Army and Air Force. Both services have a legitimate requirement to recapitalize their aging intratheater aircraft. The average age of the Army's fixed-wing aircraft is over twenty years old and the Army plans to recapitalize their older C-23, C-12, and C-26 aircraft with the Future

[1] Alphonse Karr, quote by French journalist in Paris, France (31 January 1849), accessed at http://education.yahoo.com/reference/quotations/quote/42266 on 2 January 2007, 1.
[2] Steven L Reardon, *The Formative Years 1947-1950* (Washington D.C.: Historical Office, Office of the Secretary of Defense, 1984) 402.

Cargo Aircraft (FCA).[3] Similarly, the Air Force's 2007 Posture Statement identified "recapitalizing and modernizing our aging aircraft" as one of its three priorities.[4]

The increased tempo of operations has taken its toll. Of the Air Force's 6,000 aircraft, over fourteen percent are grounded or restricted because of structural fatigue, corrosion, or component failure.[5] This is particularly true when analyzing more than 600 C-130 aircraft in the Air Force. The average age of active duty C-130s is thirty-five years with some aircraft being over forty years old. The situation in the Air National Guard and Air Force Reserve is healthier. The average age of Air National Guard C-130s is twenty years old and the average age of Air Force Reserve C-130s is sixteen years old. As of March 2007, thirty-eight active-duty C-130 aircraft were "restricted" to only flying training missions and twelve aircraft were "grounded" due to wing cracks or excessive flying hours on the aircraft.[6] These fifty restricted and grounded aircraft represent twenty-nine percent of the active-duty C-130 fleet. Because of the newer aircraft in the Air National Guard and Air Force Reserves, only one aircraft out of almost three-hundred has been grounded.

Like the Army, the Air Force made plans to recapitalize some of these older C-130s with an aircraft similar to the FCA, only its version was called the Light Cargo Aircraft (LCA). The two services were pursuing separate acquisition programs until late 2005 when the Office of the Secretary of Defense (OSD) directed them to form a joint

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[3] *2006 Army Modernization Plan*, accessed at http://www.army.mil/features/MODPlan/2006 on 3 February 2007, D13. Note: The Army's initial name for their new intratheater airlift aircraft was Future Cargo Aircraft (FCA). The name was changed to Joint Cargo Aircraft (JCA) in 2005 when OSD directed the Army and Air Force to form a joint program office.

[4] *2007 Air Force Posture Statement*, accessed at http://www.posturestatement.hq.af.mil on 2 March 2007, 13.

[5] Ibid., 41.

[6] Mr. Stan Slaydon, Headquarters, Air Mobility Command, AMC A58H, in email received on 3 April 2007.

acquisition—the Army's "Future Cargo Aircraft" program and the Air Force's "Light Cargo Aircraft" merged into a singe "Joint Cargo Aircraft" (JCA) program.[7] The joint program office would use the Army's original Joint Requirements Oversight Council (JROC) approved requirement for 145 JCA for the joint acquisition. This JROC approved requirement of 145 aircraft is the source of the current "roles and mission" debate. The number of aircraft is one source of friction. The Army makes the case it is replacing over 180 C-12, C-23, and C-26 aircraft with the JCA. Of these 180 aircraft, only 44 C-23 Sherpas are primarily used to carry cargo. An additional source of the friction is the significant increase in capability of the JCA compared to the three Army aircraft it is scheduled to replace. This increase in capability brings into question what "role" or "mission" the JCA is intended to accomplish for the Army.

The JCA will be a self-deployable cargo aircraft capable of performing short takeoffs and landings and able to fly 2,400 kilometers with an 18,000-pound payload.[8] This capability of the JCA represents twice the range and three and a half times the payload capacity of the Army's current primary cargo aircraft, the C-23 Sherpa. The Army's 44 Sherpa aircraft are capable of carrying a 5,000-pound payload 1,200 kilometers.[9] There is an even greater capability increase when comparing the JCA to the Army's C-12 and C-26 aircraft, which are primarily passenger aircraft but capable of carrying some cargo. Former Air Force Chief of Staff, General Jumper, looked at the Army JCA requirement and stated to the Army Chief of Staff, "My thought is you don't

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[7] Globalsecurity.org website, "Joint Cargo Aircraft (JCA)," accessed at http://www.globalsecurity.org/military/systems/aircraft/jca.htm, on 6 February 2007, 1.

[8] *2006 Army Modernization Plan*, accessed at http://www.army.mil/features/MODPlan/2006 on 3 February 2007, D-18.

[9] FAS Military Analysis Network, "C-23 Sherpa," accessed at http://www.fas.org/man/dod-101/sys/ac/c-23.htm, on 6 February 2007, 2.

need to go out and buy yourself an Air Force—we've got one."[10] The question of "who will be the user of airpower" that led to the Key West conference in 1948 still remains a source of tension between the services today. The United States Army's requirement for 145 JCA appears to go beyond the time-sensitive organic airlift mission defined for the Army in the Key West Agreement, yet the Army claims it needs these aircraft to support its recent transformation on the battlefield—a transformation that involves a modular force structure that is more expeditionary in nature. Follow-on discussions between Army and Air Force staffs reached an agreement with the initial 145 JCA requirement that the Army would procure 70 aircraft and the Air Force would procure 75 aircraft.[11] The Air Force would conduct additional analysis to determine the optimum number of JCA aircraft required when recapitalizing its intratheater aircraft.

The purpose of this paper is to address the current "roles and mission" debate involving the JCA and offer a solution to meeting intratheater airlift requirements that supports the Army's recent transformation. History is full of examples where the intratheater airlift community has embraced new technologies or modified operational procedures in order to overcome evolving threats and resupply troops in the field. The situation today is no different. An evolving threat has motivated the Army to transform and once again the challenge is on the airlift community to correspondingly modify the way it supports the customer. Two examples of how the Air Force can adapt to support this Army transformation will be proposed. The first example involves using Joint

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[10] Michael Fabey, "US Army Vs. Air Force, Fight Over Light Cargo Aircraft Renews Rift," Defense News.com website (2 January 2006) accessed at http://www.defensenews.com/story.pphp?F=1438098&C=landwar on 5 March 2007, 1.

[11] Jason Sherman, "Air Force Moves to Build JCA Support with States, Foreign Partners," Inside the Air Force (30 March 2007), accessed at http://ebird.afis.mil/cgi-bin/ebird/displaydata.pl?Requested=/ebfiles/e20070402502538.html on 3 April 2007, 2.

Precision Air Drop System (JPADS) technology to resupply ground forces. The second involves "On-Call Airdrop," which proposes modifying operations and adopting procedures currently used by the Close Air Support (CAS) community. On-call airdrop will result in a "time-sensitive" employment capability for airlift missions within a CAS environment. Both JPADS and on-call airdrop represent a new, distinctive capability the airlift community offers a joint force commander (JFC). This new, distinctive capability—referred to as *Flexible Precision*—is the Air Force's solution for supporting a transformed Army in this new operational environment.

To set the stage for this discussion, research was done on primary sources to review Army transformation and the evolving asymmetric threat as defined in the Quadrennial Defense Review (QDR). Using this transformed operational environment as the context, research on primary sources provided a historical review of intratheater airlift and numerous examples of intratheater airlift effectively adapting to a changed operational environment to successfully sustain the customer. Some examples include creating a humanitarian air bridge to sustain surrounded West Germans in Berlin; modifying airdrop procedures to deliver supplies in poor weather to support surrounded Marines at Khe Sanh; modifying airland procedures to use sections of highway as landing zones to support extended land forces during DESERT STORM; modifying aircraft formation procedures to integrate allied aircraft into US formations for high-altitude airdrops supporting surrounded refugees in Bosnia; and surging to support operations in Iraq, lessening the requirement for additional Army convoys during Operation Iraqi Freedom (OIF)—all examples that illustrate the innovative nature of intratheater airlift.

Using the acquisition of the JCA as a case study, a comparative analysis of Army and Air Force fixed-wing aviation programs identified distinct differences between the two services programs. This analysis revealed that the answer to the Army's recent transformation is for the Air Force to transform the way it supports the war-fighter, specifically by adopting the new distinctive capability—*Flexible Precision*—as opposed to the Army taking on the fixed-wing intratheater airlift mission. Two examples of *Flexible Precision*—JPADS and On-Call Airdrop—are proposed as innovative ways for the Air Force to sustain the customer. **The thesis of this paper is to add the concept of Flexible Precision as a USAF fixed-wing distinctive capability to enhance the Joint Force Commander's ability to meet war-fighter logistical needs and allow the Air Force to continue as the intratheater airlift provider to meet Army's requirements on the 21st century battlefield.**

This paper will focus on five areas. Chapter 1 will discuss the Army's transformation within the operational environment and introduce Flexible Precision as a new distinctive capability in response to this transformation. Chapter 2 will review the changing operational environment as defined through the lens of the National Defense Strategy and Quadrennial Defense Review. This analysis will not only define the evolving asymmetric threat, but also identify oversights within the QDR regarding intratheater airlift modernization requirements. Empirical data will be provided to show the impact of the increased ops tempo on the health of the Air Force's C-130 fleet of aircraft. Chapter 3 will provide a historical review of intratheater airlift—from the Berlin Airlift to the current crisis in Iraq—to highlight the increased demand for intratheater airlift in recent years and illustrate the consistent ability for the Air Force's intratheater

airlift community to be able to adapt to the changing operational environment in order to support the customer. A discussion of the Key West Agreement will provide the historical context of the original "roles and missions" defined for the Army and Air Force. Chapter 4 will discuss the current acquisition of the Joint Cargo Aircraft to provide a comparative analysis of Army and Air Force fixed-wing aviation programs. This analysis will highlight the differences between the Army and Air Force fixed-wing aviation programs. Finally, Chapter 5 will provide two examples of *Flexible Precision*—Joint Precision Airdrop (JPADS) and On-Call Airdrop—that are related to the intratheater airlift mission. These two examples address how the Air Force will be able to support the Army's transformation. The conclusion of this analysis and answer to the Army's transformation in the operational environment will be a recommendation for the Air Force to improve the way it provides intratheater airlift to the war-fighter, specifically by adopting the *Flexible Precision* distinctive capability and incorporating JPADS technology and on-call airdrop procedures to successful support a transformed Army.

The goal of this paper is threefold—first, it will identify the doctrinal responsibility for the Air Force to adapt to meet user requirements; second, it will provide historical examples that illustrate the successful track record of the Air Force accomplishing this task; and finally, it will identify emerging technologies and innovative tactics, techniques, and procedures (TTPs) that are available to support a transformed Army. By accomplishing these three goals, this paper will validate the proposed thesis and identify how the Air Force can continue to be the intratheater airlift provider for a transformed Army. To effectively analyze this evolving intratheater airlift mission, it is important to first discuss the Army's recent transformation on the battlefield—its greatest

restructuring since WWII. With an understanding of this transformation as well as Army and Air Force core competencies, the concept of *Flexible Precision* will be defined and proposed as the Air Force's solution to the Army's transformation.

# Chapter 1

## Army Transformation and the Air Force Response: Flexible Precision

> "To adjust the condition of the Army to better meet the requirements of the next century, we must articulate this vision: 'Soldiers on point for the nation transforming this, the most respected army in the world, into a strategically responsive force that is dominant across the full spectrum of operations.' With that overarching goal to frame us, the Army will undergo a major transformation…"[12]
>
> --General Shinseki, Army Chief of Staff
> October 1999 speech launching Army Transformation

The Army has clearly followed through on the direction provided by its former Chief of Staff, GEN Shinseki. It is currently undergoing its greatest transformation and restructuring since World War II. The Army's post-Cold War missions have shifted dramatically from tank warfare on the plains of Europe to rapid and decisive operations in distant and hard-to-reach theaters.[13] Recent operations in Afghanistan for Operations Enduring Freedom (OEF) are an example of the requirement to operate in a remote, austere environment. The centerpiece of its transformation is a modular conversion—Brigade Combat Teams (BCTs)—that result in a force that is more powerful, flexible and deployable to provide relevant and ready land power to combatant commanders and the Joint Force.[14] These modular BCTs become the building block of land combat forces in the Future Force. They serve as the foundation for the land force and will be expeditionary in nature—ready for rapid deployment and sustained operations worldwide.[15]

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[12] Dennis Steele, "Why Should the Army Change? Why Now?" *The Army Magazine Hooah Guide to Army Transformation* (Association of the United States Army, 2001), 2. Note: Quote taken from Army Chief of Staff General Eric K. Shinseki during his speech launching Army transformation.

[13] Hans Binnendijk, *Transforming America's Military* (Washington DC: National Defense University Press, August 2002), xvii.

[14] *2006 Army Modernization Plan*, accessed at http://www.army.mil/features/MODPlan/2006 on 3 February 2007, 3.

[15] *2004 Army Transformation Roadmap*, (Washington DC: Army Transformation Office, August 2004), 3-2.

The Army's goal is to create 70 BCTs and over 200 Support Brigades across the active and reserve components. This equates to a 46 percent increase in readily available combat power and a better balance between combat and support forces.[16] As of 2006, the Army had converted 24 maneuver BCTs and 39 Support Brigades and had completed force structure planning for over 90 percent of operating forces to include BCTs, Support Brigades and operational headquarters.[17] The BCTs will be balanced across a mix of light, medium, and heavy formations and will be optimized for maximum flexibility. Another source of transformation within the Army are the significant changes being made in Army aviation.

Chief of Staff of the Army, General Schoomaker, clearly specified his intent for the transformation of Army Aviation. He stated that Army Aviation will become a modular, capabilities-based maneuver arm, optimized for the joint fight, with a shortened logistics tail. Like the ground forces, the Army aviation is transforming to a capabilities-based force designed to support the new BCT structure. The Army aviation fleet is undergoing a total overhaul with more than 1,000 aircraft being recapitalized and 1,400 more modernized.[18] As previously mentioned, the Army plans to recapitalize its entire fixed-wing fleet of aircraft (over 180 aircraft) with the JCA. The Army was able to take on this significant recapitalization effort by reinvesting funds that were made available in February 2004 when the Army Chief of Staff and Secretary of Defense Rumsfeld announced the cancellation of the Comanche helicopter program. After canceling the program, the Army had roughly $14 billion available through 2011 to

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[16] US Department of Defense, Office of the Secretary of Defense, *Quadrennial Defense Review Report*, February 2006, 43.

[17] 2006 Army Modernization Plan, accessed at http://www.army.mil/features/MODPlan/2006 on 3 February 2007, 5 & 19.

[18] BG E.J. Sinclair, "Aviation Transformation: How Far Have We Come?" accessed at http://quad-a.org/Archives/0411.htm on 6 February 2007, 2.

recapitalize and modernize aviation programs.[19] The goal of the Army transformation—both aviation modernization and modularization by forming BCTs—is to be able to operate in traditional formations as well as smaller, autonomous units. A more detailed discussion of core competencies for both the Army and Air Force will help set the stage for addressing the optimum solution to the Army's transformation.

Army Core Competencies

While the BCT has become the centerpiece for the Army's modularized force structure, the Soldier remains the centerpiece of the Army's BCT. The Army transforms with the understanding that people are always more important than hardware. This concept has remained consistent with its core competencies which emphasize the importance of the Soldier. The United States Army has two core competencies:[20]

1) Training and equipping Soldiers and growing leaders

2) Providing relevant and ready land-power capability to the Combatant Commanders as part of the Joint Force.

Air Force Core Competencies

Prior to 13 January 2003, the Air Force had the following six core competencies: air and space superiority, precision engagement, information superiority, global attack, rapid global mobility, and agile combat support.[21] In January 2003, Air Force Secretary Roche and Air Force Chief of Staff, General Jumper, renamed these *distinctive*

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[19] Kathleen Rhem, "Army Leaders Recommend Canceling Comanche Helicopter Program," Armed Forces Information Service (23 February 2003), accessed at http://www.defenselink.mil/news/Feb2004/n02232004_200402237.html on 24 February 2007.

[20] *The United States Army 2004 Posture Statement*, accessed at http://www.army.mil/aps/04/core.html on 3 February 2007, 1.

[21] Air Force Basic Doctrine, *Air Force Doctrine Document 1* (September 1997), accessed at http://www.fsu.edu/~rotc/AFDD%20Briefs/afdd1.pdf on 5 March 2007, 29-34

*capabilities* and designated three new core competencies for the Air Force. These core competencies are:

1) Developing Airmen
2) Technology-to-Warfighting
3) Integrating Operations.[22]

These core competencies focus on providing combat capability for the joint warfighter by leveraging superior people and technology. The six distinctive capabilities are the strengths the Air Force brings to the joint fight. What distinguishes Air Force flying operations from sister services is the speed and duration in which it supports the warfighter. The Navy is similar to the Air Force and can support sustained military operations when two carriers are present. With only one carrier however, the Navy can generally support seventy-two hours of surge operations before needing to stand-down for twelve hours. The Army and Marine Corp air assets primarily support ground maneuver operations—short range and short duration—and neither service focuses on conducting global attack operations rapidly. The Air Force, however, focuses on providing these capabilities full-time. This paper proposes adding a seventh distinctive capability—*Flexible Precision*—as an additional capability the Air Force brings to the joint fight.

While both the Army and Air Force have unique core competencies, Joint Vision 2020 accurately points out that the integration of the core competencies provided by the individual services is essential to the joint team. The joint force, because of its flexibility and responsiveness, will remain a key operational success in the future.[23] The challenge for the intratheater airlift mission is being able to adapt to the Army's transformation on

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[22] Air Force Basic Doctrine, *Air Force Doctrine Document 1* (November 2003), accessed at http://afpubs.hq.af.mil on 5 March 2007, 74-82.

[23] *Joint Vision 2020* (Washington DC: US Government Printing Office, June 2000), 2.

the battlefield. The expeditionary nature of the Army's BCT structure and fact that it is capable of deploying smaller units into more austere environments creates new challenges for the intratheater airlift community. To support the Army's recent transformation, the Air Force must adopt an additional distinctive capability—specifically *Flexible Precision*—to be able to continue to meet the sustainment requirements on the 21st century battlefield.

**Flexible Precision**

Some might question the necessity to add *flexible precision* as a distinctive capability when the Air Force had already identified *precision engagement,* first as a core competency and then as a distinctive capability. Although related, flexible precision expands on the definition of precision engagement by emphasizing the importance of the "human dimension." It is the added human element that provides the flexibility that commanders desire. The current distinctive capability of precision engagement has not emphasized the human element, but instead focuses primarily on improvements in technology. The significant technological improvements in recent years have justified identifying precision engagement as a standalone key capability; but the evolving asymmetric threat now requires a reassessment of the capabilities required in the joint fight. Adding the human element to the breakthrough precision technologies generates the added quality of flexibility that is required in today's operational environment, thus the proposed addition of the distinctive capability *flexible precision*. For both distinctive capabilities—*flexible precision* and *precision engagement*—precision weapons are an integral component of the capability.

The breakthrough technologies related to precision weapons have redefined the way military operations are conducted. Hundreds of aircraft bombing a single target are no longer needed as was the case in WWII. Instead, a single aircraft is capable of providing the same effect by accurately hitting the target using precision weapons. During the Vietnam War it took a rough average of 170 bombs to destroy a small fixed target, but today it takes just one bomb, which can be delivered by a stealthy B-2 loaded with 16 such weapons.[24] Figure 1 below highlights the significant improvements in precision technology over time and corresponding improvements in accuracy and flexibility:[25]

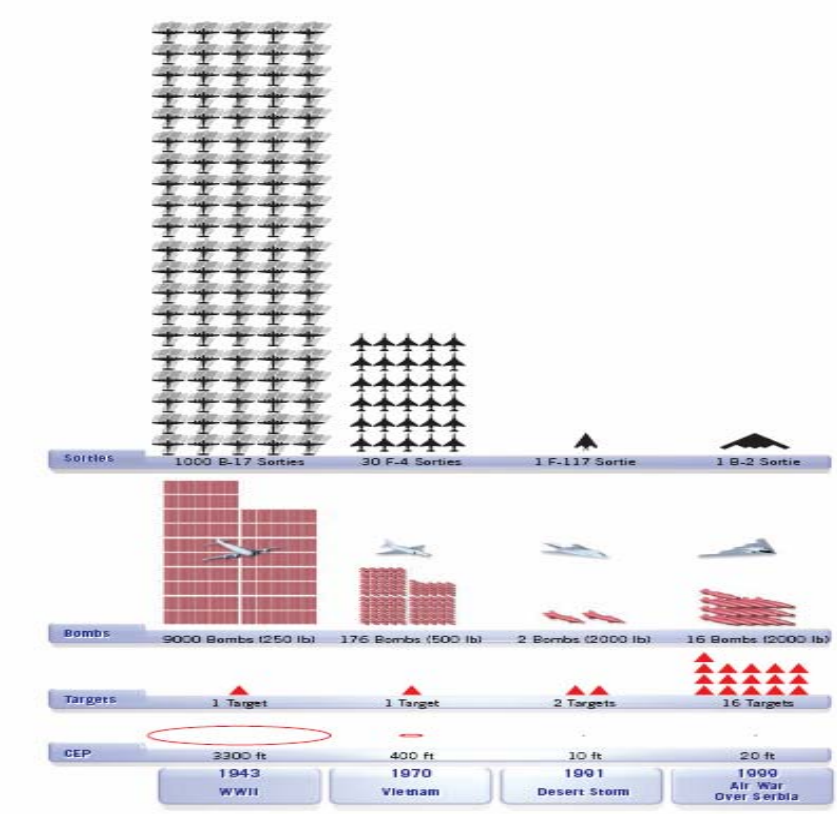


**Figure 1: Improvements In Precision Technology**

[24] Binnendijk, 6.

[25] Brigadier General David A. Deptula, "Effects-Based Operations: Change in the Nature of Warfare", *Defense and Airpower Series*(Arlington, VA: Aerospace Education Foundation, 2001), 8.

Adding the human dimension to precision engagement is the next logical step. The Combat Air Forces (CAF) within the Air Force have already taken steps in this direction. Good examples of *Flexible Precision* include adding Hellfire missiles to Predator aircraft; having B-2s that are able to program 16 targets and reprogram just minutes prior to release while enroute to the objective area; and incorporating HUMINT inputs into the command and control structure to redirect kinetic actions during time-sensitive targeting missions. Adding the human element with precision technology provides the flexibility required in today's operational environment. The Mobility Air Forces (MAF) can follow the lead of their CAF brethren and similarly incorporate the human dimension into airlift operations. Two examples of *flexible precision* within the intratheater airlift mission will be discussed in the final chapter, these being Joint Precision Air Drop System (JPADS), where high-altitude airdrops are used to resupply Army forces, and the "on-call airdrop," or employment of airlift in a close air support (CAS) environment. Both examples illustrate the benefit of flexibility combined with precision to support the Army as it transforms.

The use of the word "flexible" is not new to military doctrine. Many readers will be familiar with the term "Flexible Response", the Kennedy Administrations doctrine that changed the "massive retaliation" response to the nuclear threat and stressed the need for ready non-nuclear forces as a deterrent to limited war.[26] The strategic airlift community has its roots in the Flexible Response era, being able to rapidly move conventional forces anywhere in the world. A byproduct of the Flexible Response era was the development of the C-5, the Air Force's largest mobility aircraft. The C-5 directly supports the Air

[26] Walter Hermes, "Global Pressures and the Flexible Response," *American Military History, Army Historical Series* (Washington DC: Center of Military History, United States Army, 1989), 591-2.

Force's distinctive capability *Rapid Global Mobility*—not surprising, considering it has a cargo compartment longer than the Wright brothers' first flight and a gas tank the size of a 25-meter swimming pool. The strategic lift capabilities of the C-5, combined with the tactical agility of the C-130 and C-17, a total of more than 1,300 aircraft in all, give the US the ability to project power that no country can match.[27] While the strategic airlift mission of rapidly moving conventional forces anywhere in the world has remained consistent, the tactical airlift mission is faced with adapting to provide continued support to the Army's transformation within the operational environment.

In the same way that Flexible Response produced the strategic airlift capability as is known today, *Flexible Precision* is proposed as tactical airlift's solution in response to the Army's recent transformation and emerging asymmetric threat. To get a second perspective on the changing operational environment of the 21st century, it is beneficial to review the latest guidance from the nation's civilian leadership. A review of the National Defense Strategy and Quadrennial Defense Review provide an excellent definition of the evolving asymmetric threat and changing operational environment.

[27] Vernon Loeb, In War Effort, US Relies on Strategic Airlifts, *The Washington Post*, 24 June 2002, pg A-13.

# Chapter 2

## Changing Operational Environment in the 21st Century

*"America is at war…"*[28] President G. W. Bush, NSS
*"In a time of unconventional challenges and strategic uncertainty"*[29] SecDef Rumsfeld, NDS

A unifying theme has remained consistent throughout the development of all levels of strategy over the past five years—all have been written during a time of war with high operations tempo. This is particularly true for the intratheater airlift community. The purpose of this chapter is to view intratheater airlift through the lens of the National Defense Strategy (NDS) and Quadrennial Defense Review (QDR). The goal of this analysis is to describe the evolving asymmetric threat and associated impact on intratheater airlift and to highlight oversights within the QDR regarding insufficient reference to intratheater airlift changes required to counter this asymmetric threat.

### Changing Threat Environment

The US military is in the process of transformation to effectively operate in an evolving threat environment. Both the 2005 NDS and 2006 QDR recognize this changing threat. The end of the Cold War created a situation where the US military was the lone superpower and thus dominated traditional forms of warfare. Adversaries clearly recognized this traditional military advantage and thus countered US power with three asymmetric types of threats: irregular, catastrophic, and disruptive. The 2005 NDS further defines these three evolving asymmetric threats: [30]

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[28] Office of the President of the United States, *The National Security Strategy of the United States of America* (March 2006), i.
[29] Department of Defense, Office of the Secretary of Defense, *The National Defense Strategy of the United States of America* (March 2005), iii.
[30] Ibid., 2.

Irregular Threat - Adversaries are using terrorism and insurgency, two forms of irregular warfare, when fighting US forces. Extremist ideologies and a lack of effective governance further intensify irregular warfare. The enemy often takes a long-term approach to break down the resolve and will of their enemies to fight. T.E. Lawrence, in his article *The Evolution of a Revolt*, highlights unique differences between an insurgency and traditional warfare. Victory is measured not in battles, but instead in territory. A rebellion using only two percent of the populace with ninety-eight percent being sympathetic to the cause can be an effective insurgency.[31] The situation in Iraq is a clear example of irregular warfare with a few extremists using terrorist actions not to win battles, but instead break down US resolve to stay in Iraq.

Catastrophic Threat - A second asymmetric form of warfare is the *catastrophic* approach which could potentially be used by adversaries today. Some adversaries are pursuing weapons of mass destruction (WMD) which would create a catastrophic effect if employed. The fact that a single WMD event could prove catastrophic highlights the danger of this emerging threat. Proliferation of WMD technology and expertise has become an objective of both transnational terrorists and rogue nation states.

Disruptive Threat - The third type of asymmetric threat is disruptive. It represents an emerging technology that could exploit US vulnerabilities or offset current military advantages. Some examples of breakthroughs include biotechnology, cyber-operations, and directed energy weapons.[32]

Using these NDS definitions of asymmetric threats, the 2006 QDR identified four priority areas that operationalize the NDS. These four priority areas are defeating

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[31] T. E. Lawrence, "The Evolution of a Revolt," reprint from *Army Quarterly and Defence Journal* (United Kingdom, October 1920), 8-11.

[32] *The National Defense Strategy of the United States of America*, 3.

terrorist networks; defending the homeland in depth; shaping the choices of countries at strategic crossroads; and preventing hostile states and non-state actors from acquiring and using WMD. [33] The quad chart shown in Figure 2 below highlights the relationship between the traditional and asymmetric threats to the four focus areas addressed in the QDR.[34]

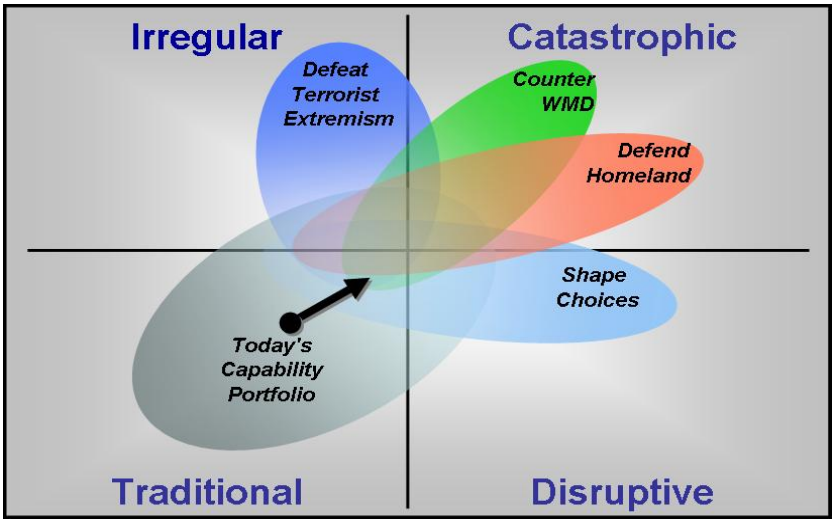


**Figure 2. Traditional/Asymmetric Threats and Associated QDR Focus Areas**

The black arrow in Figure 2 above represents a shift in US military capabilities that is required to address the evolving asymmetric threat. The four focus areas are used by the Department of Defense as guidance for sizing and shaping the US Armed Forces. It is in this context that an assessment of the evolving asymmetric threat and associated impact on intratheater airlift will be addressed.

**Impact of Asymmetric Threat on Intratheater Airlift**

Analysis of three areas—QDR focus areas, NDS attributes, and QDR framework—provide a clear understanding of the asymmetric threats' impact on intratheater airlift. The *QDR focus areas* that operationalize the NDS highlight the

[33] Office of the Secretary of Defense, *Quadrennial Defense Review Report* (February 2006), 19.
[34] Ibid., 19.

increased importance of intratheater airlift. The key *NDS attributes* relate to the size and shape of military forces required to meet this asymmetric threat. Finally, the *QDR framework* describes how the military should be shaped. Analysis of the QDR framework will specifically address QDR oversights regarding intratheater airlift force structure changes. Insufficient modernization programs for intratheater airlift aircraft are identified within the QDR.

QDR Focus Areas – Two of the four focus areas referenced in the QDR—defeating terrorist networks and defending the homeland in depth—identify an increased importance of intratheater airlift in an asymmetric threat environment. As previously stated, the terrorist threat is not a traditional conventional military threat, but instead a distributed multi-national and multi-ethnic network of terrorists.[35] These networks aim to exhaust the will of the US by making this a "long war." The impact of this long war on intratheater airlift is significant. Current deployment rates for intratheater airlift crews are four times the desired rate. Air Force Reserve commander, Lt. Gen. John Bradley, summarizes the dilemma best: "We are about to run out of the entire mobilization of the C-130 world, and a lot of people are worried about that."[36] Because sixty-five percent of the C-130s reside in the Air National Guard and Air Force Reserve, the long war has placed an increased burden on the thirty-five percent of C-130s that reside in the active duty. A reliance on volunteerism from Guard and Reserve forces whose mobilization authority has been exhausted is required to sustain the demand for intratheater airlift when fighting the long war. In addition to fighting abroad, the importance of intratheater airlift in the defense of the homeland is equally important.

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[35] Ibid., 20.

[36] Bryant Jordan and Rod Hafemeister, "15-Day War-Zone Tours for Air Reserve Crews," *Air Force Times* (11 December 2006), 13.

As part of defending the homeland, the QDR references the *Strategy for Homeland Defense and Civil Support*, which identifies the strategic goal of securing the United States from direct attack. A secondary objective of these forces is to respond to natural disasters, similar to the response demonstrated after Hurricane Katrina. The demand for intratheater airlift to support humanitarian relief operations that result from natural disasters—both abroad and at home—illustrates the continued importance of intratheater airlift.

NDS Attributes – A second area that illustrates the impact of the asymmetric threat is a review of the NDS and associated attributes. After defining the traditional and asymmetric threats, the NDS identifies desired capabilities and attributes required to meet these threats. One key attribute is the associated sizing and shaping of military forces to meet the asymmetric threat. To execute the NDS, the armed forces must be configured to accomplish the following four areas: defend the US homeland; operate in and from four forward regions to assure allies and friends, dissuade competitors, and deter and counter aggression and coercion; swiftly defeat adversaries in overlapping military campaigns while preserving for the President the option to call for a more decisive and enduring result in a single operation; and conduct a limited number of lesser contingencies[37]

All four of these areas represent a dependence on intratheater airlift. Regarding defense of the homeland, the importance of intratheater airlift to respond to natural disasters like Hurricane Katrina has been identified as a key capability. The ability to operate in and from four forward regions implies a dependence on intratheater airlift. The third task of swiftly defeating adversaries in overlapping military campaigns may at first glance appear to be less applicable to the intratheater airlift community. However,

[37] *National Defense Strategy*, 16

when looking closer at the two examples referenced in the NDS, Operations DESERT STORM and ALLIED FORCE, both "swift" air campaigns were followed by lengthy intratheater airlift sustainment operations. In the case of ALLIED FORCE, C-130s continued humanitarian relief operations into Sarajevo as part of Operation PROVIDE PROMISE, long after the two-week DELIBERATE FORCE bombing campaign concluded. Since DESERT STORM, C-130s have maintained a continuous and demanding presence in Iraq and Kuwait conducting sustainment operations. The final area referenced in the NDS—lesser contingencies—clearly correspond to intratheater airlift missions. These operations include non-combatant evacuation operations, peace operations, disaster relief, or humanitarian assistance.[38]

QDR Framework – While the NDS identified the capabilities and attributes required for US Armed Forces when facing an asymmetric threat, one purpose of the QDR was to provide the framework for how these forces should be shaped or modified. A review of this QDR framework highlights an oversight with regards to intratheater airlift modifications required to execute the NDS and counter the asymmetric threat. The foundation of the QDR is the NDS. Both documents are in agreement when it comes to defining the asymmetric threat, and it was shown how the QDR operationalizes the NDS by identifying the four focus areas previously addressed. As part of the QDR framework, Department of Defense leadership considered the QDR focus areas and recommended force structure changes required to counter the evolving asymmetric threat.[39] While appropriate changes were recommended for Joint Ground Forces, Special

[38] Ibid., 16.
[39] Ibid., 41.

Operations Forces, and Joint Maritime Capabilities, there were oversights in the Joint Mobility section—specifically with regards to required intratheater airlift changes.

The QDR discussion on Joint Mobility focused primarily on intertheater airlift issues, not intratheater airlift. Joint Publications define intratheater airlift as airlift within a theater. Unlike intertheater airlift which provides the air bridge linking a theater to other theaters, intratheater airlift provides movement of personnel and supplies within a geographic combatant command's area of responsibility.[40] Assessment of capabilities reference the acquisition of 180 C-17s and modernization of 112 C-5s—both important strategic airlift issues, but primarily intertheater airlift related.

The only reference to intratheater airlift is the current acquisition of twenty-seven C-130Js, the projected procurement of eighteen additional C-130Js, and the establishment of a joint program office for the acquisition of a new light cargo aircraft [now referred to as joint cargo aircraft] for future intratheater airlift needs.[41] There is no reference to modernizing the existing fleet of C-130 aircraft—over 600 aircraft that comprise the bulk of the nation's intratheater airlift capability. Many of these older C-130s are grounded or flying in a restricted status (limited payloads) due to fatigue and wing-cracks attributed to the high operations tempo since the first Gulf War. Additionally, these older C-130s require avionics modernization upgrades similar to the C-5 aircraft to comply with current international aviation standards. Two separate efforts are currently underway to resolve the problems with the older C-130s. The first program involves a repair or replacement of the center-wing box to address the structural fatigue problems that are

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[40] United States Department of Defense Joint Publication 3-17, *Joint Doctrine and Joint Tactics, Techniques, and Procedures for Air Mobility Operations*, (August 2002, Change 1, April 2006), IV-1 to IV-3.

[41] *National Defense Strategy*, 54.

restricting or grounding many of the older C-130s. When the center-wing boxes are repaired, it adds an additional 7,000 flying hours on the aircraft. When the center-wing boxes are replaced, the aircraft will be able to fly an additional 25,000 hours. This equates to an additional ten to fifteen years of extended service life depending on how hard the aircraft are flown.[42] The second program is the C-130 Aviation Modernization Program (AMP) that will update avionics and system safety components and standardize the fourteen variants of C-130s that have developed in over four decades of production. These two C-130 upgrades are not referenced in the 2006 QDR, which represents a significant oversight. The Air Force Chief of Staff and Secretary of the Air Force appropriately identified both of these C-130 modernization programs in the 2007 Air Force Posture Statement.[43]

The QDR also references the Department of Defense's Mobility Capabilities Study (MCS) that examined the mobility force structure required to support the NDS. Unfortunately, this MCS does not assess intratheater airlift requirements. As mentioned in the September 2006 Government Accountability Office (GAO) report:

> In some cases the MCS results were incomplete, unclear, or contingent on further study, making it difficult to identify findings and evaluate evidence. Our analysis of the MCS report found that it contains several recommendations for further studies and assessments, five of which are underway…[one being] intratheater airlift capabilities…. Then, in the part of the report that addresses intratheater airlift, the report states that a detailed analysis of intratheater airlift needs would require improved modeling tools to accurately capture interactions among land, sealift, and airlift capabilities.[44]

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[42] Stan Slaydon, Headquarters Air Mobility Command, AMC A58H, telecom on 3 April 2007.

[43] *2007 Air Force Posture Statement*, accessed at http://www.posturestatement.hq.af.mil on 2 March 2007, 55.

[44] William M. Solis, "Study Limitations Raise Questions about the Adequacy and Completeness of the Mobility Capabilities Study and Report," GAO-06-938 (Washington DC: United States Government Accountability Office, September 2006), 4.

The GAO report also points out that this lack of intratheater airlift analysis brings into question the accuracy of MCS findings that projected airlift capabilities are adequate to achieve US objectives when executing the NDS. The Air Force realized the shortcomings within the MCS related to intratheater airlift and is currently supporting a RAND study to accurately define the intratheater airlift requirement for the "last tactical mile." RAND completed the Functional Needs Analysis which identified specific shortfalls in future capability due to the aging C-130 fleet. The next step is to accomplish the Functional Solutions Analysis to evaluate ways to mitigate this shortfall.[45]

Despite living in a time of unconventional challenges and strategic uncertainty, one part of our military mission has and will remain certain—there will be a continued demand for intratheater airlift. There is another certainty in our strategic environment. The adversaries the US faces will continue to evolve and it is imperative that the country updates its strategies to reorient military capabilities in this dynamic environment. The latest NDS and QDR both recognized the emerging asymmetric threat and need for the military forces to shift from a traditional Cold War force structure to be able to also address irregular, catastrophic, and disruptive threats.

Despite recognizing the importance of this asymmetric threat, the QDR unfortunately overlooked the impact on the intratheater airlift community. The one area that is addressed is the joint acquisition of the JCA, a smaller aircraft that will help meet Army requirements in this evolving operational environment. This joint acquisition raises many questions. Should the JCA predominantly be an Air Force or Army asset? Should the Army take on more of the intratheater airlift mission using the JCA? To effectively

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[45] David Orletsky, "Functional Solutions Analysis for Future Intra-theater Lift" *RAND, Project Air Force* (Fiscal Year 2007 Research Agenda), accessed at http://www.rand.org/paf/agenda/aerospace.html on 5 March 2007, 3.

answer these questions, it is important to first analyze the historical background of intratheater airlift as it has evolved over the years. A review of intratheater airlift will show three things: first, that it has been an integral part of the Air Force since its inception; second, that intratheater airlift capabilities have successfully transformed over time to be able to accomplish the mission; and third, that the demand for this capability has increased with time. This historical review of intratheater airlift will show how the Air Force has repeatedly adapted to a changed operational environment to successfully support its customer.

# Chapter 3

## Historical Background on Intratheater Airlift

*"Transport is the stem of the rose."*[46]
*--Winston Churchill*

Intratheater airlift missions are deeply rooted in Air Force history and the legacy has continued throughout the years. This chapter will focus on some Air Force intratheater airlift success stories—successful because they illustrate the Air Force accomplishing its assigned mission as defined in the Key West Agreement. The specific roles and missions of the Key West Agreement will be discussed at the end of the chapter after first reflecting on some key airlift events where the Air Force innovatively modified operations or applied breakthrough technologies to effectively support sister services or allied countries sustainment requirements.

Berlin Airlift - In June 1948, just eight months after standing up as a separate service, the Air Force began the Berlin Airlift. After the Soviet military cut off electricity and stopped all coal and food shipments into West Berlin, the city's two million people were threatened with starvation. Within five days of the Soviets initiating the blockade, over one hundred and fifty aircraft were delivering over 400 tons of supplies. By November 1948, the British and US transport planes were delivering over 4,000 tons of supplies a day.[47] When the Air Force's first humanitarian relief operation was completed after 318 days, Operation VITTLES had delivered over 2.3 million tons of cargo to West Berlin.[48] The contributions of intratheater airlift during the Berlin Airlift were

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[46] Pamela Feltus, US Centennial of Flight Commission, "Airlift and Transport Operations," accessed at http://www.centennialofflight.gov/essay/Air_Power/cargo/AP19.htm on 12 February 2007, 3.

[47] Martin Walker, "Berlin Airlift Fiftieth Anniversary," *Europe* (Washington: May 1998), Issue 376, 1.

[48] Feltus, 3.

instrumental in establishing the credibility of the Air Force being able to accomplish the airlift resupply mission.

WWII Airlift Successes - While the Berlin Airlift clearly validated the importance of intratheater airlift airland operations, previous missions during WWII highlighted the importance of a second intratheater airlift mission—airdrop operations. Although the Army was in the process of creating an airborne force prior to the attack on Pearl Harbor, little thought had been given to using transport aircraft to provide mobility and maneuver to ground armies. By the end of WWII, however, airdrop operations had been part of nearly every military operation with the exception of the Pacific island campaigns where ships could easily resupply ground troops.[49] Here are a few examples of influential airdrop operations during WWII.

The earliest application of airdrop operations was in the jungles of New Guinea, when the 21st and 22nd Troop Carrier Squadrons airdropped supplies to Australian troops combating the Japanese. These two troop carrier squadrons were equipped with an assortment of aircraft, whatever could be put together—Douglas DC-2s, Lockheed Loadstars, Douglas C-53s (paratrooper versions of the DC-3), and even converted Boeing B-17s that were modified for an airlift role.[50] Eventually, C-47s would become the main airlift platform in most troop carrier squadrons with numerous examples of use during WWII. On September 5, 1943, eighty-seven C-47s airdropped the 503rd Parachute Infantry on Nadzab and the airborne assault took the Japanese completely by surprise, who abandoned the airfield without a fight. On 6 June 1944, Operation OVERLORD, the Normandy invasion, involved more than 1,000 transport aircraft for the allied invasion

[49] Sam McGowan, "The Path to Allied Victory." *World War II* (February 2000), Vol 14, Issue 6, 1.

[50] Ibid., 2.

into France. These are just a few examples from WWII where transport squadrons airlifted supplies to advancing ground units, airdropped supplies to airborne forces, or airdropped troops behind enemy lines. It is no surprise that General Eisenhower referred to the C-47 as one of the most important weapons of WWII.[51]

Vietnam War Airlift Successes – The Vietnam War is filled with examples of intratheater airlift heroics. Two that capture the essence of airlift forces coming to the rescue are the battle at Khe Sanh, where relief supplies were airdropped to Marines surrounded by enemy forces, and the battle at An Loc, where Vietnamese forces were isolated and aerial delivery was the only means of resupply. Both examples illustrate the innovative ability of the airlift community to continually look for emerging technologies and to modify procedures to adapt to an evolving threat environment—indicative of the current situation with the evolving asymmetric threat and associated Army transformation.

The allied victory of Khe Sanh in 1968 was made possible by airlift.[52] Part of the success can be attributed to improved technologies for airlift at the time and innovation on the part of aircrew—a theme that will be revisited in the final chapter where innovative JPADS technology and modified on-call airdrop procedures are offered as an Air Force solution to Army's latest transformation on the battlefield. In the Khe Sanh battle, Marines were surrounded by the North Vietnamese with only thirty days of supplies remaining and aerial delivery was the only means of resupply. Two factors at Khe Sanh drove the innovative breakthroughs—poor weather conditions at the drop zone and the

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[51] Ibid., pg 9.

[52] Ray L. Bowers, *The United States Air Force in Southeast Asia, Tactical Airlift* (Washington. DC: US Government Printing Press, 1983), 295.

enemy's persistent and determined use of firepower.[53] The consistent poor weather inspired aircrew to develop all-weather airdrop procedures which had previously been a major weakness of air transport forces. A couple of experienced airlifters developed the idea of using ground-based radar to guide the airdrops. This innovative approach not only enabled ground forces to be resupplied during adverse weather conditions, but it also provided aircrew the protection of being able to deliver supplies while flying within the protection of cloud cover. C-130s and C-123s developed the all-weather airdrop capability, and C-7 Caribou aircraft also participated on days when weather permitted airland operations. In a two and one-half month period at Khe Sanh, intratheater airlift aircraft flew over 1,100 missions delivering over 12,000 tons of supplies.[54]

Four years later, in 1972, the Battle of An Loc showcased once again intratheater airlift heroics. The ensuing battle for An Loc was the most trying time of the Vietnam War for C-130 crews and conditions were far worse than previously experienced at Khe Sanh. This was partly because the forces being resupplied were primarily Vietnamese with only a few US Army advisors. Additionally, the enemy threat was much more formidable, including both antiaircraft shells and surface-to-air missiles.[55] Three aircraft were shot down attempting low-level resupply airdrops.[56] Other loads dropped from 5,000 feet or higher in an attempt to avoid enemy fire drifted with hopeless inaccuracy. The requirement was to deliver two-hundred tons of supplies a day. After the first three days of airdrops by C-123s and C-119s, only 34 tons of 135 airdropped were

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[53] Ibid., 295.
[54] Ibid., 315.
[55] Ibid., 539.
[56] Sam McGowen, "US Air Force Airlifts in the 1972 Easertide Offensive," The History Net, accessed at www.historynet.com/wars_conflicts/vietnam_war/3038066.html?showAll=y&c=y on 8 February 2007, 4.

recoverable.[57] The following quote from an advisor Army Captain captures the ineffectiveness of the initial airdrops at An Loc:

> Up through the 3rd or 4th of May, the (drop effort) was totally unacceptable and totally unsatisfactory…our figures from the time the drops first started until 1 May indicated we only received 8 percent of the resupply.[58]

Once again, innovation on the part of the airlift community became the solution to the evolving operational environment. Changes both in technology as well as operational procedures combined to overcome the challenges presented at An Loc. Aircrew changed the way they approached the drop zones. Rather than the standard descending run-in that involved flying at slower speeds for two minutes prior to dropping supplies, aircrew adopted high-speed (250 knots) arrivals at tree-top level, popping up to drop altitude for the airdrop. In addition, aircrew would talk to Forward Air Controllers (FACs) just prior to takeoff to get the latest information on the threat. This was an important innovation because the on-the-scene controller could advise C-130 crews on the safest inbound and outbound headings.[59]

In addition to these operational procedure changes, technological advancements also contributed to more accurate airdrops. A "high-velocity" airdrop capability was developed that involved modifying the chutes so that they dropped about four times as fast as regular chutes. Extra layers of cardboard honeycomb were used to "pad" the impact of the accelerated airdrops and results were significant. Over a three day period from 8 to10 May, eleven high-velocity airdrop missions were conducted and 139 of 140

[57] Bowers, 541.
[58] Ibid., 547.
[59] Ibid., 542.

bundles hit the drop zone.[60] This development of high-velocity, high-altitude airdrop was clearly the turning point of the battle at An Loc. This capability proved so successful that it would still be used during high-altitude humanitarian airdrops in Bosnia some twenty years later.

Gulf War Airlift Success - Operation DESERT SHIELD/STORM was by far the biggest airlift in history. Every six weeks the equivalent of one Berlin Airlift, up to that time the world's biggest airlift, was accomplished.[61] While a majority of this airlift is attributed to the strategic movement of significant combat power into the Gulf region, the intratheater airlift forces played a key role supporting extended ground forces once the land war began. The infamous “left hook” that was integral to success in the war was supported by innovation on the part of intratheater airlift community. With no available runways, aircrew landed on sections of highway to deliver fuel and supplies for the extended ground forces. Long after the “100-hour ground war” had concluded, intratheater airlift assets remained in theater to support Operations NORTHERN WATCH and SOUTHERN WATCH as well as Operation PROVIDE COMFORT which supported refugees in Northern Iraq.

Bosnia Airlift Success - Almost fifty years after WWII, in the mid-1990s, the Air Force once again found itself flying one of the longest humanitarian missions in history—this time providing food and medical supplies to Bosnia as part of Operation PROVIDE PROMISE. During the three-and-a-half year operation—almost three times the duration of the Berlin Airlift—over 21 countries supported the humanitarian relief missions into

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[60] McGowen, 5.

[61] John W. Leland, "Air Mobility in Operation DESERT SHIELD/STORM: An Assessment" (Scott AFB, IL: Air Mobility Command History Office, 1993), 1.

Sarajevo with the US as the lead.[62] The C-130, which had proven invaluable during the Vietnam War for resupplying troops via airland and airdrop operations, was the primary aircraft used for Bosnian relief operations. Once again, innovation on the part of airlift crews enabled the integration of German and French aircraft into the high-altitude airdrops over Bosnia. Because German C-160s and French C-130s lacked ground-mapping radars and defensive systems similar to those found on US aircraft, the allied aircraft would follow behind the US formations. The US aircraft would use their radars to navigate to the drop zones and defensive systems to maintain situational awareness on radar threats, and lead the allied aircraft through the high-altitude airdrops.

The C-130 has developed the reputation as the workhorse of intratheater airlift operations, having been in production for over four decades and still being built today.[63] This reputation as a workhorse has strengthened in recent years as the demand for intratheater airlift increased in the past two decades. An analysis of recent peacekeeping operations will help the reader gain an appreciation for the significant pace of intratheater airlift operations since the end of the Cold War. Ironically, it was the end of the Cold War that triggered the increased demand for intratheater airlift. General Zinni, in his book *The Battle for Peace*, illustrates this point:

> In the first thirty-three years of its existence, from 1945 to 1978, the United Nations conducted only 13 peacekeeping operations aimed at defusing crises and building stability. Over the next decade, 1978 to 1988, the UN launched no new operations of this kind; but since then, the numbers have exploded, with forty-seven being conducted from 1988 to the present. A similar increase has occurred in international humanitarian missions during this period.[64]

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[62] National Museum of the Air Force, "Operation Provide Promise Fact Sheet," accessed from http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=1736 on 6 December 2006, 1.

[63] Air Force Link, "C-130 Hercules Fact Sheet," accessed at http://www.af.mil/factsheets/factsheet.asp?fsID=92, on 5 December 2006, 1.

[64] General Tony Zinni, *Battle for Peace* (New York: Palgrave Macmillan, 2006), 67.

In addition to humanitarian operations, Military Operations Other Than War (MOOTW) have become a regular event for the airlift community. MOOTW, in countries such as Somalia, Bosnia, Haiti, Bangladesh, East Timor, and Rwanda, became a central focus of military operations in the post Cold War environment.[65] As Loren B. Thompson, a defense analyst at the Lexington Institute states, "the importance of airlift probably has more prominence now than at any time since the Berlin Airlift for two basic reasons—we have fewer forces positioned overseas, and we are operating in far more obscure places, like the Balkans and Afghanistan."[66]

OEF/OIF Airlift Successes - Operation Enduring Freedom in Afghanistan was the first operation in US history where everything came into the country through the air—bombs, beans, and bullets. America moved the entire war machine into the landlocked country by air.[67]

While both strategic and theater airlift assets contributed to the successful operations in Afghanistan, continued operations in Iraq highlight the invaluable impact that intratheater airlift assets are making by requiring less convoys on the road thus lessening the exposure to improvised explosive devices (IEDs). In 2004, Air Force Chief of Staff, General Jumper, committed C-130s and C-17s to OEF and OIF. This resulted in taking thousands of convoys off dangerous roads and reducing the threat of IEDs to about 8,500 people each month.[68]

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[65] Ibid., 68.

[66] Vernon Loeb, "In War Effort, US Relies on Strategic Airlifts; Air Mobility Fleet Flies Cargo, Troops to World's Tight Spots," *The Washington Post* (24 June 2002), A-13.

[67] Ibid., A-13.

[68] *2007 Air Force Posture Statement*, accessed at http://www.posturestatement.hq.af.mil on 2 March 2007, 16.

This benefit of lessening the exposure of convoys to IEDs is one reason why the Army is pursuing the acquisition of the JCA. This increased demand on intratheater airlift has once again fueled the roles and mission debate between the Army and Air Force. Doctrinally, the Army is entitled to have an organic airlift capability in order to perform time-sensitive missions. The question becomes, "how much organic airlift capability is required for the transformed Army of the 21st century?" A review of the Key West Agreement will provide the historical context of the original roles and missions defined for the Army and Air Force.

Key West Agreement of 1948

To understand the "roles and missions" issue that led to the Key West conference, it is important to consider the historical context. The USAF had recently become an independent service. Additionally, the National Security Act of 1947 and Executive Order 9877 signed by President Truman on 26 July 1947 identified primary functions of the three armed services. Specific functions for the Army and Air Force included:

> …for the United States Army, to be organized, trained, and equipped primarily for prompt and sustained combat incident to operations on land. The specific functions of the Army are to organize, train, and equip land forces for: operations on land, including joint operations; seizure or defense of land areas, including airborne and joint amphibious operations; and the occupation of land areas…
>
> …for the United States Air Force, to be organized, trained, and equipped primarily for prompt and sustained air offensive and defensive operations. The specific functions of the United States Air Force are to organize, train, and equip air forces for: air operations including joint operations; gaining and maintaining air supremacy; establishing air superiority as required; air lift and support for airborne operations; air support to land forces and naval forces; and air transport for the armed forces… [69]

[69] National Archives of the United States, *Code of Federal Regulations*, "The President 1943-1948 Compilation" (Washington: United States Government Printing Press, 1957), 659-661.

While Executive Order 9877 had seemingly delineated roles and missions of the armed forces satisfactorily, in less than a year, President Truman revoked the executive order and replaced it with Executive Order 9950. This new executive order was based on a "Functions Paper" that was prepared by Secretary of Defense Forrestal and the Joint Chiefs of Staff after the Key West and follow-on conferences. Both the updated Executive Order 9950, and Functions Paper upon which it was derived, expanded on the broadly defined roles and missions of the services to spell out both primary and secondary responsibilities. The following excerpt from Executive Order 9950 highlight some of the agreements from Key West. Of particular note is the direction to prevent unnecessary duplication or overlapping among the Services:

> …the intent of Congress to provide three military departments for the operation and administration of the Army, the Navy (including naval aviation and the Marine Corps), and the Air Force, with their assigned combat and service components; to provide for their authoritative coordination and unified direction under civilian control but not to merge them…The functions stated herein shall be carried out in such a manner as to achieve: integration of the Armed Forces into an efficient team of land, naval, and air forces…and prevention of unnecessary duplication or overlapping among the Services, by utilization of the personnel, intelligence, facilities, equipment, supplies and services of any or all Services in all cases where military effectiveness and economy of resources will thereby be increased…
>
> …Functions of the United States Army include land combat and service forces and such aviation and water transport as may be organic therein. It is organized, trained, and equipped primarily for prompt and sustained combat operations on land.
>
> …Functions of the United States Air Force include air combat and service forces. It is organized, trained, and equipped primarily for prompt and sustained combat operations in the air. The Air Force is responsible for…logistical air support to the Army, to include air lift, support, and

> resupply of airborne operations…and provide air transport for the Armed Forces.[70]

Generally speaking, core competencies for each service can be viewed through the operating medium of the respective services, i.e. Army operates on land and Air Force operates in the air. While Forrestal had hoped that the Key West Agreement would bring an end to the roles and missions dispute, by the time he returned from the Florida conference, he had messages from his service secretaries saying that general officers where unhappy to hear of press reports saying there had been agreement in all major areas at Key West. Questions remained on whether the Air Force and Navy could coordinate aviation operations and whether the Army and Marine Corp could collaborate effectively on the ground.[71] While the Key West Agreement did resolve many questions, history has shown an ongoing tension between services regarding the roles and missions of the armed services…a tension that is still present today. As previously mentioned, the source of tension today is the joint acquisition of the JCA. This warrants a comparative analysis of Army and Air Force fixed-wing airlift programs to determine the appropriate force structure of each service.

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[70] Alice C.Cole, *Documents on Establishment and Organization, 1944-1978* (Washington DC: Office of the Secretary of Defense Historical Office, 1979), 276-7.

[71] Steven L. Reardon, *The Formative Years 1947-1950* (Washington DC: Historical Office of the Secretary of Defense, 1984), 397.

# Chapter 4

## Joint Acquisition of the JCA

It has been shown how the evolving asymmetric threat has driven the Army to transform and become more modularized. Taking advantage of available funding from the canceled Comanche helicopter program, the Army is pursuing a complete recapitalization of its fixed-wing fleet. OSD recently directed the Army and Air Force to establish a joint acquisition for their respective Future Cargo Aircraft (Army version) and Light Cargo Aircraft (Air Force version) programs. The Army was essentially two years ahead of the Air Force in the Joint Capabilities Integration and Development System (JCIDS) process and had a defined requirement for 145 JCA. The Air Force was in the process of defining its requirement when OSD directed the merger of the two service programs and establishment of a single joint program office. During the Army's Acquisition Strategy Review (ASR), OSD directed that the joint acquisition have one supply system, one training system, and one sustainment system.

The challenge is that the Army and Air Force are diametrically opposed when considering how each service approaches these systems (supply, training, and maintenance) within their respective fixed-wing aviation programs. This issue warrants further discussion—specifically the difference between Army and Air Forces organizational structure, use of in-house capability for maintenance and training support versus reliance on contractor support, and the dependence of both services on their Air National Guard and Reserve forces to support the intratheater airlift mission. Each of these three issues will be addressed individually to highlight the challenges facing the joint acquisition of the JCA.

Differing Army & Air Force Organizational Structures

The Army and Air Force have different approaches to fixed-wing aviation. The differing approaches do not imply that one service is operating the wrong way. However, it does highlight inefficiencies when the joint program office must account for the differing approaches. The Army no longer possesses the capability for field-level maintenance on fixed-wing aircraft and relies completely on contractor support. In addition, all organizational level maintenance for the Army is provided by contractor support. The Air Force, however, has retained both organizational and field-level capability for maintaining a majority of their fixed-wing assets. One of the reasons for maintaining this capability is the 50/50 rule where by law (10 USC Section 2466,) fifty percent of Air Force organizational level maintenance must be provided by government depot maintenance facilities.[72] This ensures the government maintains an organic capability for maintenance repairs should a surge in war-time be required.

The challenge the JCA joint program office is facing is how to accomplish a joint acquisition when the two services have differing approaches to how they maintain their aircraft. Because the Army is reliant on contractor support for maintenance, it desires to pursue aircraft commercially available today knowing that it will continue to use contractor support for maintenance requirements for its aircraft. The Air Force however, because of the 50/50 rule, often purchases an aircraft that it as a service will maintain. The impact of these different approaches is some inefficiency within the joint program. While the basic airframe will be the same, the Army will be maintaining a Federal

[72] US House of Representatives, Office of the Law Revision Counsel, *10 USC Section 2466, Limitations on the Performance of Civilian Commercial or Industrial Type Functions* 3 January 2006, accessed at http://uscode.house.gov/uscode-cgi/fastweb.exe?getdoc+uscview+t09t12+1494+1++()%20%20AND%20((10)%20ADJ%20U on 3 April 2007, 1.

Aviation Administration (FAA) certified aircraft that is maintained by contractor support. The Air Force will purchase additional technical data for the aircraft to maintain the aircraft using Air Force personnel and government depot facilities.

The point is not that one service is operating the wrong way but instead that the Army and Air Force are organized differently and, as such, approach supporting respective fixed-wing aviation programs differently. The joint acquisition will have to account for these different maintenance approaches.

Training Differences between Army and Air Force

A second area that is approached differently is with regards to how the services train their airmen. In the same way that the Army contracts maintenance requirements, it also contracts out training requirements for fixed wing aviation. The Air Force, however, predominantly maintains this capability within the service. With only a few exceptions, the Air Force maintains the inherent capability to train its aviators within the Air Force. This difference does not pose as great a challenge to the joint program office, however, because the Army can actually take advantage of the Air Force's internal training capability thus lessening their dependence on contractor support. Precedence has been set, as the Air Force already trains Coast Guard C-130 pilots. The Air Force could similarly train Army JCA pilots.

Air National Guard and Reserve Force Structure Differences

The greatest challenge for the joint force commander today is the impact of the predominance of intratheater airlift aircraft being located in the Air National Guard and Reserve forces. This dilemma exists for both the Army and Air Force, but when considering the likelihood of a continued "long war" the problem is much more critical

for the Army's organizational structure. Both the Army and Air Force rely on Air National Guard and Reserve forces to augment their active duty forces. A significant difference between the services, however, is that the Army has placed one-hundred percent of its fixed-wing aircraft within the Army Air National Guard. The Air Force, while not as dependent on the Air National Guard as the Army, still has over sixty-five percent of its intratheater airlift assets in the Air National Guard and Reserve forces. This force structure worked well when fighting the Cold War. However, the recent increase in intratheater airlift operations has placed an increased burden on the operators. An additional challenge for the Air Force is the fact that the older C-130 aircraft are predominantly in the active-duty. As previously mentioned, of the fifty restricted or grounded aircraft, forty-nine are located in the active-duty.[73]

The real problem becomes apparent when trying to support the long war. Because mobilization authority expires in two years, the recent war in Iraq has highlighted the problem of having a majority of assets within the Air Reserve Component (ARC). The latest QDR highlights the shift in capability of the armed forces to focus more on the asymmetric threat and less on the traditional threat. This asymmetric threat corresponds to an increased likelihood of longer wars in the future as well.

The current Army force structure, with one-hundred percent of the fixed-wing assets being located in the Air National Guard, will experience aircrew availability issues when mobilization authority has expired and individuals have been deployed for two years. It could be argued that even the Air Force places too great a percentage of its intratheater airlift assets within the ARC to support sustained combat operations. One proposal being considered within the Air Force is to place the JCA aircraft in the stateside

[73] Stan Slaydon, 1.

Air National Guard and Reserve units that currently fly C-130s. This would free up C-130s to transfer to active duty squadrons and allow Air National Guard and Reserve units to focus on the Homeland Defense mission using the JCA. This transfer would also provide the active duty units additional C-130s to perform the intratheater airlift mission overseas.

Having discussed the evolving threat environment as referenced in the QDR, as well as the Army's transformation within the operational environment and desire to recapitalize fixed wing aviation assets with the JCA, two examples of Flexible Precision can now be analyzed to highlight how the Air Force can adapt to better support the Army through their transformation. The first example is JPADS, which takes advantage of emerging precision technology. The second example is On-Call Airdrop, which proposes modifying operations and adopting procedures currently being used by the CAS community. These two examples of *Flexible Precision*, combined with the Air Force recapitalizing a portion of its intratheater airlift fleet with the JCA, will result in the optimum solution to the Army's transformation and illustrate once again how the Air Force can innovatively incorporate emerging technologies and new procedures to effectively sustain the Army.

# Chapter 5

## Flexible Precision Applied to the Intratheater Airlift Mission

*"Innovation, in its simplest form, is the combination of new "things" with new "ways" to carry out tasks."*[74] *Joint Vision 2020*

This chapter will describe two examples of Flexible Precision that are applicable to the intratheater airlift environment. Both illustrate the importance of precision and the human dimension—the key elements used to define Flexible Precision. The examples also relate perfectly with Joint Vision 2020's definition of innovation above as both JPADS and on-call airdrop combine new "things" and new "ways" to resupply deployed troops. The first emerging technology that will be discussed is JPADS, which the Army, Air Force, and Marines have already validated in combat as a proven capability.

### Joint Precision Air Drop Systems (JPADS)

JPADS is clearly a joint collaboration success story. The Army and Air Force have worked together to field this capability. The Marines are testing their own "lighter" version and the Special Operations community has also applied this technology to its high-altitude personnel jumps. The catalyst that motivated the JPADS requirement is the ground threat that forced resupply missions to be flown at higher altitudes. Two examples of the ground threat effecting resupply missions have already been discussed, specifically, An Loc in South Vietnam in 1972 and the high-altitude airdrops in Bosnia during Operation PROVIDE PROMISE.

The innovation of incorporating breakthrough technologies into JPADS airdrops is revolutionary because the results of the high-altitude airdrops have proven more accurate than current low-level airdrop operations. JPADS is a new aerial delivery system that

[74] *Joint Vision 2020* (Washington DC: US Government Printing Office, June 2000), 13.

incorporates Global Positioning System (GPS) technology and a steerable parachute system to use high-altitude airdrops to resupply ground forces.[75] The Army has taken the lead on developing the GPS-guided chute—called an aerial guidance unit (AGU)—and the Air Force has the lead on integrating the mission planner, a laptop computer that is carried on Air Force aircraft (C-130s or C-17s) to transmit weather and geographic data to the AGU just prior to release from the aircraft. The JCA will also be capable of delivering JPADS airdrops. Once dropped from the aircraft, the AGU is able to correct for errors and steer itself to the desired landing target. A pictorial depiction of the JPADS concept of operations is shown in Figure 3 below.

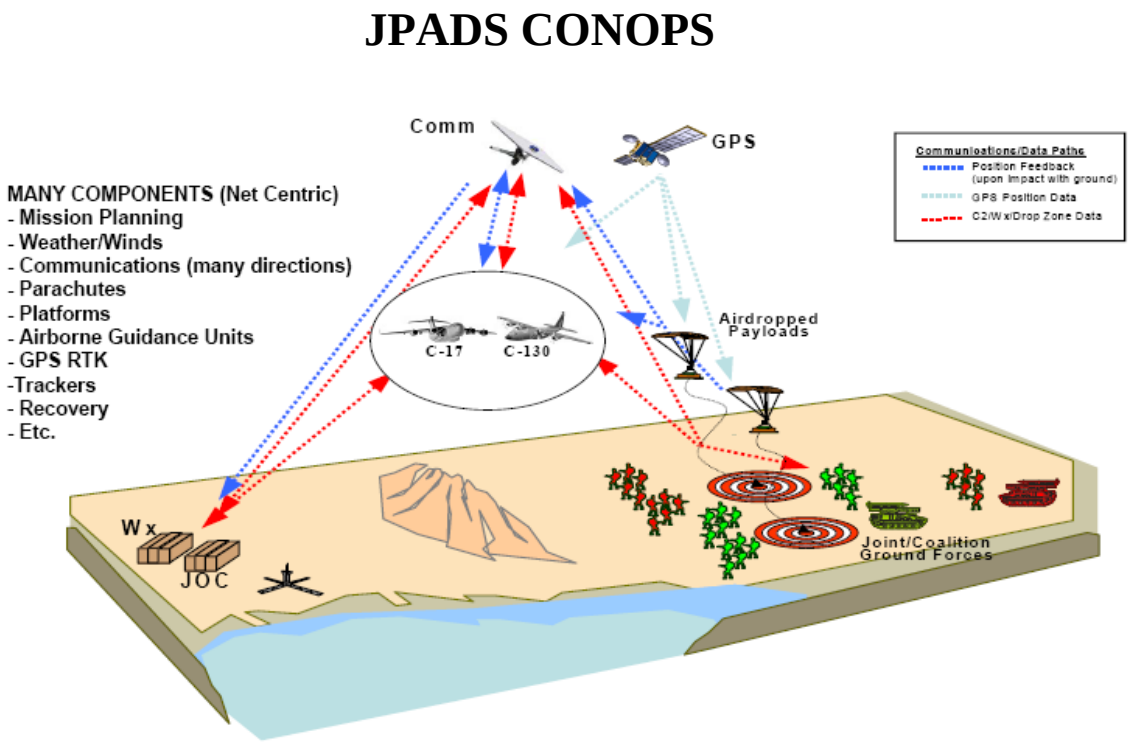


**Figure 3. JPADS Concept of Operations[76]**

[75] "High-Altitude Precision Aerial Resupply Being Tested," *Army Logistician* (September/October 2005), Volume 37, Issue 5, 46.

[76] Natick briefing to HQ US Army G3/G4/G8, "JPADS Program Overview, CJTF-76 RFI/Plan and Related Activities" (16 June 2006), slide 25.

Two JPADS models have been developed and tested so far, one that delivers a 2,000-pound payload and a second that delivers a 10,000-pound payload. The Army Soldier Systems Center is also working on a 30,000-pound version and future testing with loads weighing up to 60,000 pounds is expected.[77] The Marines have developed what they call a "JPADS Extra Light" that delivers smaller loads weighing closer to 200 pounds.

Similar to the Army, the Marines are deploying with smaller sized units into more austere environments. While deployed in Afghanistan in 2005, Marines experimented with "Distributed Operations (DO)," where multiple distributed squads were seamlessly linked to other units, command elements, and air assets using state-of-the-art communications gear.[78] While the distributed squads could successful operate independently, it became apparent that resupply was the largest operational barrier to the DO concept. Deployed commanders said Afghanistan is about as hard as it gets for resupply. During Operation MOUNTAIN LION, helicopters were used more frequently, but this required a central drop point which meant sending Marines off to collect the supplies and return them to the distributed squads.[79] JPADS technology was the obvious solution to the problem of getting food and material to the small dispersed Marine squads which are key to the DO concept.

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[77] "High-Altitude Precision Aerial Resupply Being Tested," *Army Logistician* (September/October 2005), Volume 37, Issue 5, 46.

[78] Matt Hillburn, "Beans and Bullets, Resupply is the Toughest Challenge Linked to Distributed Ops," *Seapower* (August 2006), 46.

[79] Ibid., 46.

In early 2006, the Marines deployed to Afghanistan with ten JPADS units. In April 2006, they successfully conducted operational JPADS airdrops.[80] Figure 4 below illustrates how JPADS technology supports ground forces that are dispersed on the battlefield. A single aircraft can drop multiple JPADS bundles, each with its own GPS guidance system and steerable chute. The result is improved flexibility because ground forces no longer will have to recover to a central drop location. Instead, relief supplies can be dropped directly where the troops are located.

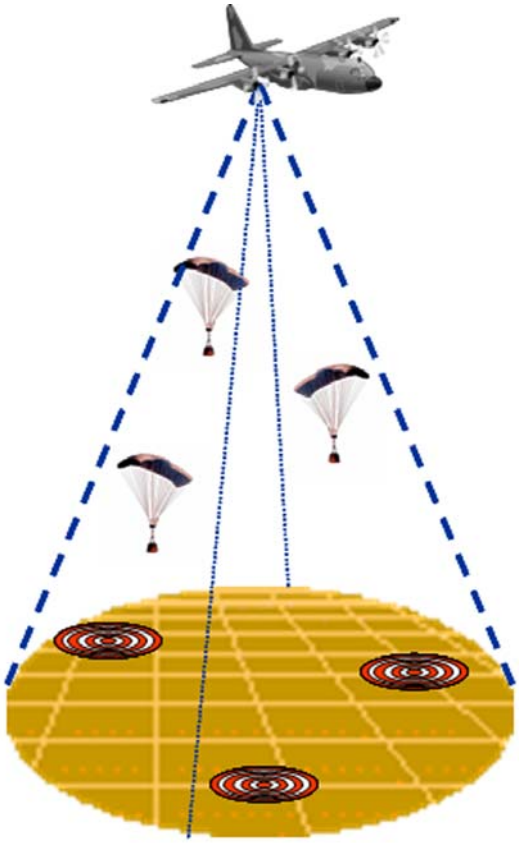

**Figure 4. Multiple Drop Zone Capability Using JPADS Technology**

The success of getting JPADS capability to the warfighter is directly attributable to the Precision Airdrop Technology Conference and Demonstration (PATCAD) that are

[80] "Joint Precision Airdrop System 2400 Pound System Rapid Combat Fieldings & Development Programs," (last updated 3 December 2006), accessed from NATICK website at https://airdrop.natick.army.mil/ACTD/ on 24 February 2007, 6.

held every two years to showcase state-of-the-art precision airdrop technology. Since 2001, the biennial PATCAD events have been instrumental in exposing national leaders and decision makers to the military utility of JPADS technology. The forum for the Aerial Delivery community to share experiences and view emerging JPADS technologies has grown significantly over the years: in 2001, eight systems were demonstrated; in 2003, over two hundred participants from nine foreign nations saw fourteen companies demonstrate fourteen different systems; and then in 2005, over 350 personnel from seventeen nations saw sixteen companies demonstrate twenty-three unique systems.

The 2005 event conducted 129 airdrops using five aircraft, to include a Belgian C-130, German C-160, USAF and USMC C-130s, and a commercial C-130.[81] One of the goals of PATCAD was to show the interoperability of the systems and aircraft from different NATO nations. There is significant coalition partner interest in JPADS and NATO participation is expected to increase. NATO's Conference of National Armaments Directors has identified ten priority Defense Against Terrorism (DATs) for NATO. Precision airdrop for special operations forces was one of the ten DATs.[82] During the latest PATCAD demonstration, systems from Italy, the Netherlands, Canada, and Germany were dropped out of Belgian, German, and US aircraft by their respective flight crew, thus validating the effective interoperability of JPADS within the NATO community.

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[81] "Final Report, Precision Airdrop Technology Conference and Demonstration" (2005), US Army RDECOM, Natick Soldier Center, accessed from NATICK website at https://airdrop.natick.army.mil/ACTD/ on 24 February 2007, 1.

[82] "Joint Precision Airdrop System Rapid Fielding Initiative to support CJTF-76 operations and 'Avoid' IEDs", accessed from NATICK website at https://airdrop.natick.army.mil/ACTD/ on 24 February 2007, 2.

During the 2005 PATCAD, numerous 2,000-pound systems were tested for operational deployment. The 10,000-pound "Screamer" was selected for continued development under the Advanced Concept Technology Demonstration (ACTD).[83] The Screamer utilizes a high wing-loaded ram-air controllable parafoil at high altitudes for a guided descent and then deploys traditional cargo parachutes near the ground for a soft landing.[84] Recent airdrop test with the 10,000-pound Screamer have proven very successful. In January and February 2007, high-altitude testing at Yuma Proving Grounds airdropped JPADS Screamers from both C-130s and C-17s. Altitudes for the drops varied between 17,000 feet and 25,000 feet and both aircraft varied the types of drops, some involving multiple Screamers being dropped to the same drop zone while others involved multiple Screamers being dropped to multiple drop zones. The results were outstanding. For the multiple Screamers to a single drop zone, the average drop score (distance from planned target point) was 120 meters. For the multiple Screamers to multiple drop zones, the average drop score was 160 meters.[85]

To illustrate the applicability of the human element during these high-altitude JPADS tests, aircrew used the mission planner computers to change the intended drop zones in-flight. This increased flexibility of being able to reprogram en-route illustrates the distinctive capability of *Flexible Precision* that JPADS offers the intratheater airlift community. In the same way that a single B-2 can simultaneously deliver multiple bombs against multiple targets with a high degree of accuracy, a single airlift platform flying above the threat is able to deliver multiple payloads to multiple dispersed units with great

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[83] Sean George, "Aerodynamic Decelerators," *Aerospace Sciences* (December 2005), 14.
[84] Madsen, Chris, "Aerodynamic Decelerators," *Aerospace Sciences* (December 2004), 16.
[85] Emperical test data from 31 January to 1 February 2007 airdrop testing at Yuma Proving Grounds. Data provided by Mr. Neil Nacchio, JPADS ACTD Deputy Operational Manager, in email received 23 February 2007.

precision. This significant capability has resulted in numerous Rapid Fielding Initiatives in recent years.

JPADS Rapid Fielding Initiatives

Many services, as well as combatant commands, have Rapid Fielding Initiatives in order to expedite getting JPADS capability to the warfighter. CENTCOM was the first to submit an Operational Need Statement (ONS), requesting twenty 2,000-pound systems and twenty 10,000-pound systems in March 2004. Although funding initially prevented this request from being filled, it remained as a valid requirement within CENTCOM.[86] In early 2006, Army operations in Afghanistan were requiring an increased number of airdrop operations to resupply troops. Over a fourteen week period, 10th Mountain Division required 76 airdrops to deliver over 550 bundles of food and water. The Deputy Commanding Officer, 10th Sustainment Brigade, LTC Robert Gagnon, said, "We will continue these drops as long as we have soldiers fighting in these austere conditions." Resupply by airdrop was required every three to four days and aircraft were dropping low-altitude to ensure accurate delivery of the supplies. At least two aircraft were hit by enemy fire during these airdrops.[87]

As a result of these numerous airdrops, CJTF-76 submitted another ONS in 2006, this time for 2,000-pound Screamer systems. The primary justification for the CJTF-76 initiative was to help avoid the IED threat. These Screamers would be able to be dropped from C-130s or C-17s from altitudes of 25,000 feet up to 10 kilometers from the intended impact point. This not only greatly reduced the risk to the cargo aircraft because they

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[86] "Joint Precision Airdrop System 2400 Pound System Rapid Combat Fieldings & Development Programs" (last updated 3 December 2006), accessed from NATICK website at https://airdrop.natick.army.mil/ACTD/ on 24 February 2007, 2.

[87] Natick briefing to HQ US Army G3/G4/G8, "JPADS Program Overview, CJTF-76 RFI/Plan and Related Activities" (16 June 2006), slide 9.

could overfly the threat, but it also reduced the number of ground vehicles required for supply missions, thus decreasing the IED threat.[88] The Joint Staff J-4 endorsed the CJTF-76 requirement and concurred that this capability would help mitigate IED and Man Portable Air Defense Systems (MANPADS) risk associated with joint distribution operations.[89] This time Global War on Terrorism (GWOT) and Air Force funding supported the request and by February 2007, fifty units were delivered to the CENTCOM theater. On 16 February 2007, the Air Force conducted its first JPADS airdrop in combat by delivering six 1,200-pound bundles containing water and Meals, Ready-to-Eat (MREs) to ground troops.[90] To date, the Marines, Air Force, and USSOCOM have successfully employed JPADS technology in combat, and most services have aggressive Programs of Record to field this capability as soon as possible.

JPADS Programs of Record

As mentioned, most services are pursuing Rapid Fielding Initiatives to get the JPADS capability to the warfighter as soon as possible. These services are backing up this effort by establishing formal JPADS Programs of Record. The Army, as the program manager for the 2,000-pound system, has programmed $9.3 million for research and development through fiscal year 2009 and over $8 million in fiscal years 2009-10 to purchase ninety-two systems. The USMC, AF, and AFSOC have also programmed money to buy JPADS 2,000-pound systems as well as the JPADS mission planner

[88] "Joint Precision Airdrop System Rapid Fielding Initiative to support CJTF-76 operations and 'Avoid' IEDs", 1.

[89] Joint Staff J-4 Memorandum for Department of the Army G-3/G-4/G-8, "Operational Needs Statement (ONS) for Joint Precision Airdrop System in Operations Enduring Freedom" (12 June 2006), 1.

[90] Carlos Diaz, Air Force Link, "First JPADS Airdrop Over Iraq a Success," accessed from http://www.af.mil/news/story.asp?storyID=123041573 on 20 February 2007, 1.

computers. The Air Force funding has been programmed for fiscal years 2008 through 2013.[91]

When comparing these JPADS Programs of Record to the Army and Air Force JCA joint program, it becomes apparent that JPADS will be fielded before the JCA becomes operational. The Army has programmed forty-six JCA aircraft through 2013 with the first two aircraft being purchased in 2007 and delivered in 2008. The Air Force has programmed fifty-six JCA aircraft through 2013 and is scheduled to receive the first aircraft in 2010.[92] By the time the first JCAs are delivered to the Army and Air Force, JPADS will have been integrated into C-130 and C-17 operations. Similarly, JPADS technology will be used on the JCA once it becomes operational.

JPADS clearly offers a significant capability for the Air Force to accomplish its resupply or sustainment mission as defined in the Key West Agreement, particularly in the context of supporting an Army that has transformed because of an evolving asymmetric threat. Similarly, the Air Force can use on-call airdrop as another way to accomplish the maneuver mission of airdropping troops or supplies within a hostile environment.

**On-Call Airdrop**

The concept of on-call airdrop originated at the Mobility Weapons School. Over the past three years it has developed into a formidable capability, particularly in the context of the emerging asymmetric threat and associated Army transformation. Joint

[91] "Joint Precision Airdrop System 2400 Pound System Rapid Combat Fieldings & Development Programs," 18.

[92] Jason Sherman, 2.

Publication 3-17, *Joint Tactics, Techniques, and Procedures (TTPs) for Air Mobility Operations*, identifies the importance of rapid, flexible, and focused logistics:

> The ability of airlift to rapidly and flexibly accommodate the critical resupply requirements of units engaged and operating in such a dynamic environment provides commanders with an essential warfighting capability.[93]

On-call airdrop is one answer to this requirement. The premise behind on-call airdrop is to employ airlift in a CAS type environment, a time-sensitive resupply capability that better meets Army logistical requirements in the dynamic and rapidly changing operational environment. The concept of on-call airdrop is very similar to the innovative changes that airlift crews made during the Vietnam War, specifically during the battle at An Loc. When the enemy threat increased in 1972, aircrew started talking to the Forward Air Controller (FAC) just prior to takeoff to determine the safest ingress and egress routing. Airlift crews today are able to receive this same threat update information "real-time" by applying existing CAS procedures.

The problem is that the current system being used to resupply the Army has not incorporated on-call airdrop procedures. A recent Army study identified the need for a more responsive intratheater airlift capability. The 2005 study done by the Army Combined Arms Support Command Directorate identified shortcomings in the current logistical distribution system:

> The current distribution system is a slow, indirect resource-compounding system, tied to highly vulnerable chokepoints such as sea ports of debarkation (SPODS), landing zones (LZs), and ground lines of communication (GLOCs); therefore, critical resupply often reaches the user in days and weeks, instead of hours and with certainty.[94]

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[93] United States Department of Defense Joint Publication 3-17, *Joint Doctrine and Joint Tactics, Techniques, and Procedures for Air Mobility Operations* (August 2002, Change 1, April 2006), IV-3.

[94] *Initial Capabilities Document for Improved Cargo Airdrop Capability*, US Army Combined Arms Support Command Directorate of Combat Development (July 2005), 7.

The deployed joint force in the field currently receives logistical support in one of two ways, either by traditional GLOCs, or by air through the Joint Movement Center (JMC) validation and movement process. The problem with the JMC validation process is that it takes 48-72 hours to schedule airlift—an unrealistic requirement for the Army's transformed modular force.[95] The lighter, leaner deployed forces are much more dependent on timely logistical resupply. The lengthy JMC process ultimately limits the flexibility of forces on the ground. On-call airdrop offers combatant commanders a unique sustainment capability that optimizes flexibility and improves responsiveness. Because on-call airdrop procedures are modeled after existing CAS procedures, there will be minimal impact adopting this capability and integrating it into the joint fight.

Adopting the CAS Model

CAS procedures are firmly rooted in joint doctrine and many of these concepts can be directly applied to on-call airdrop. *Joint Tactics, Techniques, and Procedures for Close Air Support*, JTTP 3-09.3, describes the process for employing CAS in support of joint forces and highlights necessary considerations for effective planning. Many of these same procedures can be directly applied to the concept of on-call airdrop. The CAS 9-line, a standardized briefing form, is the template that ensures all players are operating off the same sheet of music. A Joint Terminal Air Controller (JTAC) is the key person who deconflicts not only CAS assets, but also ground and sea-based artillery. The JTACs

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[95] Captain Michael Fellona, "Introduction to On-Call Airdrop," *USAF Mobility Weapons Journal* (Spring 2006), 6. Note: the entire Spring 2006 edition of the *Mobility Weapons Journal* is dedicated to information related to on-call airdrop.

are embedded with ground forces and direct the action of combat aircraft engaged in CAS and other air operations.[96]

The JTAC deconflicts assets by using an Airspace Coordination Area (ACA). An ACA is a three-dimensional block of airspace in the target area, established by the appropriate ground commander, in which friendly aircraft are reasonably safe from friendly surface fires.[97] ACAs provide an avenue to separate aircraft from surface fires by distance, time, lateral offset, or any combination of these to provide deconfliction to and from the objective area. The JTAC uses the 9-line to provide deconfliction restrictions to aircraft. On occasion, the JTAC can also use an airborne asset to act as a Forward Air Controller (airborne) [FAC(A)]. The FAC(A) acts as an airborne extension of the JTAC and enhances the ability to detect, identify, and destroy targets. This concept can be used by airlift crews to get the latest airdrop information to aircrew as well as updated information on threats in the area.

The intratheater airlift community is familiar with the 9-line concept, but has not traditionally worked with a JTAC or operated in a CAS environment. Over the past three years, the Mobility Weapons School has effectively executed air drop missions using on-call airdrop procedures being controlled by a FAC(A).[98] The procedures that CAS assets have used for years that effectively deconflict delivery of ordinance are easily applied to airlift assets delivering resupplies to combat troops. An added benefit of using

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[96] United States Department of Defense Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)* (Change 1, September 2005), I-2.

[97] Air Force Tactics, Techniques, and Procedures (AFTTP) 3-1.26, Vol 26 *Theater Employment Theater Air Control System* (30 October 2003), 6.4.3.3.1.1 (S) (Information extracted is unclassified).

[98] For a more detailed description of the tactical-level procedures used in on-call airdrop—use of killboxes and common geographic reference grids—reference two student papers from the Mobility Weapons School: Major Thomas McGee, *On-Call Airdrop: Keeping Beans and Bullets in the Fight*, 15 October 2004; and Captain Thomas Young, *Refining Combat Aerial Delivery: On-Call Airdrop Employment and Executing the "9-Line" Ingress*, 25 October 2005.

the FAC(A) or JTAC is that the airlift crew is provided a current situation update, getting information on enemy disposition, threat activity, weather, friendly positions, and current fire support coordination measures.[99] This situational update increases the aircrew's situational awareness on the threat environment and objective area thus improving the likelihood of a successful resupply to ground forces.

Procedurally, the airlift crew flies to a preplanned orbit point awaiting further direction from the JTAC or FAC(A).[100] The controller then relays the 9-line with the required information for the airdrop—run-in heading, drop zone location/description, and egress routing, etc. On-call airdrop in essence becomes time-sensitive targeting for airlift assets. The end result is the ability to resupply ground forces who are rapidly moving in a dynamic operational environment, which results in increased flexibility to the ground commander. In addition to resupplying the troops, on-call airdrop can be used to maneuver Army forces by airdropping combat troops, thus providing ground commanders optimum flexibility by being able to adjust the drop zone location and passing updated drop information to the aircrew using the 9-line.

By integrating airlift into the CAS environment, the outcome is a truly integrated joint force. Previously, airdrop missions would be deconflicted by time or space with preplanned routes to an objective area. This not only limited flexibility for the ground forces but also separated airlift operations from concurrent CAS operations. By using the JTAC or FAC(A) to direct the airdrop, airlift missions becomes integrated into the CAS environment, and flexibility is increased for the deployed ground force commander.

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[99] Joint Publication 3-09.3, V-21.

[100] For additional information on JTAC, reference article by Major Chad Bushman, "JTAC…The On-Call Airdrop Linchpin," *USAF Mobility Weapons Journal* (Spring 2006), 13-15.

## Conclusion

The prophetic nature of the quote: “the more things change, the more they remain the same” resonates within the Air Force today, particularly in light of the rekindled “roles and mission” debate regarding the intratheater airlift mission. The saying is particularly prophetic when considering the innovative nature of airlift aircrew and the significant role intratheater airlift has played throughout Air Force history. As the Air Force prepares to celebrate its sixtieth year as an independent service, and as the US reflects on the ongoing involvement in Iraq, it becomes apparent that mobility aircraft once again are—just as they were 60 years ago in Berlin—at the forefront of current day military operations. From the Berlin Airlift to Bosnia airdrops, humanitarian relief missions have been an integral part of military heritage and a key to US global involvement. Today, mobility aircraft alone average a takeoff and landing every ninety seconds, twenty-four hours a day, three hundred and sixty-five days a year. Intratheater airlift assets have maintained a continued presence in the Gulf region ever since the end of the first Gulf War. Since the end of the Cold War, humanitarian missions involving intratheater airlift assets have increased exponentially. As the asymmetric threat continues to evolve, there is no reason to expect this pace of airlift operations to slow down.

As adversaries continue to evolve, it is imperative that military capabilities also adapt in order to remain successful in this dynamic environment. The latest NDS and QDR both recognized the emerging asymmetric threat and need for our military forces to shift from a traditional Cold War force structure to be able to also address irregular, catastrophic, and disruptive threats. The Army similarly recognized this evolving

asymmetric threat and has undertaken its largest transformation since WWII. At the heart of this transformation is the modular BCT force structure, designed to be expeditionary and better equipped to operate in a remote, austere environment. The challenge for the intratheater airlift community is to once again adapt in order to support this evolving operational environment. It has been shown that adding the distinctive capability *Flexible Precision*, through the use of JPADS technology and on-call airdrop procedures, is a way the Air Force can successfully meet this challenge.

While the QDR accurately recognized the importance of this asymmetric threat, it unfortunately overlooked the current state of the Air Force's intratheater airlift aircraft—specifically, the health of the thirty-five year old C-130 fleet. Considering the increasing number of restricted or grounded C-130 aircraft, it is imperative that the Air Force modernize the intratheater airlift fleet. The three-fold solution involves recapitalizing with some new C-130J aircraft; recapitalizing with some new JCA; and modernizing the remainder of C-130s with the Avionics Modernization Program (AMP) modification and center-wing box repair and replacement program. This solution would combine the oversized-cargo capacity of the C-17, the traditional workhorse reputation of the C-130, and the short-field capability of the JCA to provide the combatant commander with a three-pronged solution to meeting intratheater airlift requirements.

Like the Air Force, the Army has a legitimate requirement to recapitalize its fixed-wing aircraft and they too see the JCA as the solution to their aging aircraft dilemma. The billion dollar question becomes, "How much of an increase in capability is appropriate as a service recapitalizes its fleet of aircraft?" This paper makes the case that the original agreements from Key West are still applicable today. The Army should

concentrate efforts on its primary mission of conducting combat operations on land and the Air Force should concentrate on its primary mission of conducting combat operations in the air. The preponderance of JCA assets should reside within the Air Force as it recapitalizes the older active-duty C-130s and accomplishes its assigned resupply mission.

That being said, the Army needs some organic airlift capability for time-sensitive resupply missions. The Army's current Program of Record has funded forty-six JCA for its initial acquisition. This represents more than a doubling of capability compared to the forty-four C-23s currently used to transport organic Army airlift requirements. The current RAND study that addresses intratheater airlift requirements should provide additional fidelity on the appropriate number of JCA required for the intratheater airlift mission. Regardless the number of aircraft, the Army still has some tough issues to resolve, the biggest being how they will support a long war when its fixed-wing aviation capability resides completely within the Air National Guard.

Moreover, the differing approaches of the Air Force and Army to supporting respective fixed-wing aviation programs will result in some inefficiency within the joint program office. The solution to supporting a transformed Army resides where it has the past sixty years—as a core competency of the Air Force. In the same way that airlift crews improvised airland and airdrop methods in Berlin, Khe Sanh, An Loc, Bosnia, and Iraq, the onus is once again on the Air Force to innovatively adapt to the operational environment. The proposed solution is for the Air Force to adopt the distinctive capability *Flexible Precision* in order to respond to the Army's recent transformation on the battlefield.

*Flexible Precision* combines the breakthrough precision technologies of today, along with the human element, in order to provide a time-sensitive airlift capability for the warfighter. The two examples identified for the intratheater airlift mission are incorporating existing JPADS technology and applying on-call airdrop procedures in order to provide timely, accurate, and flexible resupply capability to the combatant commander. These capabilities both exist today and each has been validated.

JPADS has been a true joint success story with a collaborated effort between multiple services. To date, the Army, Air Force, and Marines have all successfully used JPADS in combat. All services have an aggressive JPADS Program of Record and JPADS units are scheduled for delivery in 2008. Considering the fact that the first JCA is scheduled for delivery in 2008 for the Army and 2010 for the Air Force, airlift crews will be able to employ JPADS operations on existing C-130s and C-17s before the first JCA is delivered to either service. Similarly, on-call airdrop procedures are being integrated into unit operations today. The procedures have been validated during USAF Weapons School missions. By utilizing CAS procedures that are well founded, both in doctrine and operational use, it is only a matter of time before mobility weapons officers infuse this on-call airdrop capability within airlift operational units. Combining the human element along with precision technology provides the flexibility required in today's operational environment.

Within the context of intratheater airlift…the more things change, the more they do remain the same. To overcome the changing asymmetric threat and ongoing Army transformation, the airlift community once again will develop innovative ways to accomplish the mission. The Air Force's intratheater airlift triad—using C-17s to move

over-sized cargo, C-130s as the traditional workhorse, and JCAs to provide additional short-field access—will provide the JFC with unprecedented intratheater airlift capability. JPADS technology and on-call airdrop procedures will be used on all three aircraft platforms. By adding *Flexible Precision* as a distinctive capability, the Air Force will incorporate JPADS and on-call airdrop as the Air Force's answer to Army transformation and intratheater airlift on the 21st century battlefield.

## GLOSSARY

ACA – Airspace Coordination Area
ACTD – Advanced Concept Technology Demonstration
AGU – Aerial Guidance Unit
AMP – Aviation Modernization Program
ARC – Air Reserve Component
ASR –Acquisition Strategy Review
BCT – Brigade Combat Team
CAF – Combat Air Forces
CAS – Close Air Support
CJTF – Combined Joint Task Force
CONOPS – Concept of Operations
DAT – Defense Against Terrorism
DO – Distributed Operations
FAA – Federal Aviation Administration
FAC(A) – Forward Air Controller (Airborne)
FCA – Future Cargo Aircraft
GAO – Government Accountability Office
GLOC – Ground Lines of Communication
GPS – Global Positioning System
GWOT – Global War On Terrorism
HUMINT – Human Intelligence
IED – Improvised Explosive Device
JCA – Joint Cargo Aircraft
JCIDS – Joint Capabilities Integration and Development System
JCS – Joint Chiefs of Staff
JFC – Joint Force Commander
JMC – Joint Movement Center
JPADS – Joint Precision Air Drop System
JROC – Joint Requirements Oversight Council
JTAC – Joint Terminal Air Controller
LCA – Light Cargo Aircraft
LZ – Landing Zone
MANPADS – Man Portable Air Defense Systems
MCS – Mobility Capabilities Study
MOOTW – Military Operation Other Than War
MRE – Meal, Ready-to-Eat
NATO – North Atlantic Treaty Organization
NDS – National Defense Strategy
NSS – National Security Strategy
ONS – Operational Need Statement
OSD – Office of Secretary of Defense
PATCAD – Precision Airdrop Technology Conference and Demonstration
QDR – Quadrennial Defense Review
SPODs – Sea Ports of Debarkation
TTPs – Tactics, Techniques, and Procedures
WMD –Weapons of Mass Destruction

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## About the Author

Lieutenant Colonel Mark Hering is a twenty-year Air Force veteran with thirteen years experience flying the C-130. He is a C-130 Weapons Officer with over 3,200 flying hours and 100 combat hours and has operational experience in both EUCOM and PACOM theaters.

Lieutenant Colonel Hering was commissioned through the ROTC program at Manhattan College and has Engineering Degrees from Columbia University and Pacific Lutheran University and an MBA from the University of Phoenix. He has completed flying assignments in the US and Europe and his previous two operational tours were at Weapons School, first as a cadre instructor and Operations Officer, and most recently as Commander of the 29th Weapons Squadron.

His staff assignments consist of an initial assignment at Air Force Logistics Command as a Systems Engineer on the F-4 aircraft, a USPACOM J3 joint exercise planner assignment working counter-terrorism exercises, and most recently, a Headquarters Air Mobility Command A5 assignment working intratheater airlift acquisition programs. Following graduation from JAWS, Lieutenant Colonel Hering will be the Deputy Commander, 603rd Air and Space Operations Center in USAFE.

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The changing operational environment has motivated the Army to undergo its largest transformation since WWII. The Army decision to procure the Joint Cargo Aircraft (JCA) has rekindled the "roles and missions" debate that first surfaced soon after the Air Force stood up as a separate service. Both the Army and Air Force have a legitimate requirement to recapitalize—the average age of Army cargo aircraft is over twenty years old and the average age of active duty Air Force C-130s are almost thirty-five years old. The significant increase in capability of the JCA, however, compared to current Army cargo aircraft (twice the range and three and a half times the payload capacity) is the source of the current "roles and mission" debate.

The purpose of this paper is to offer a solution to meeting intratheater airlift requirements that supports the Army's recent transformation. History is full of examples where the intratheater airlift community has embraced new technologies or modified operational procedures in order to overcome evolving threats and resupply troops in the field. The situation today is no different. Two examples of how the Air Force can adapt to support this Army transformation will be proposed. The first example involves using Joint Precision Air Drop System (JPADS) technology to resupply ground forces. The second involves On-Call Airdrop, a time-sensitive employment capability for airlift that adopts procedures currently used by the Close Air Support (CAS) community. Both JPADS and on-call airdrop represent a new distinctive capability—*Flexible Precision*—that the airlift community offers a joint force commander (JFC).

The thesis of this paper is to add the concept of *Flexible Precision* as a USAF fixed-wing distinctive capability to enhance the JFC's ability to meet war-fighter logistical needs and allow the Air Force to continue as the intratheater airlift provider for the Army.

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